APPENDIX I.

[Vide answer to starred question No. 284-A asked by Sri N. K. Palanisamy at the meeting of the Legislative Assembly held on 29th September 1956, page 556 supra.]

A note containing information relating to the experiments on artificial rain-making conducted in the Madras State and the conclusions of the Reviewing Committee appointed by the Government.

In August 1955, the Government approved the proposals of the Chief Engineer (Irrigation), for conducting artificial rain-making in a few selected centres and sanctioned an expenditure not exceeding Rs. 6,500. Government also constituted two committees, (1) the sub-committee consisting of the Chief Engineer (Irrigation), Chairman, Sri S. Panchanathan, Physics and Soil Mechanics Officer, Sri C. Balasubramanian, Agricultural Meteorologist, and Sri V. K. Sethuraman, Divisional Engineer, M.R.T. & M. (Secretary), to actually conduct the experiment, record, tabulate and assess the results and (2) the Reviewing Committee, with the Chief Engineer (Irrigation) as Chairman and the Chief Engineer, Electricity, Sri A. R. Venkatachari, Retired Special Chief Engineer, the Director of Agriculture, the Director, Regional Meteorological Centre, the Agricultural Meteorologist, Coimbatore, and the Physics and Soil Mechanics Officer as members and Sri V. K. Sethuraman, Divisional Engineer, M.R.T. & M. Electricity Department as Secretary to review the results and to direct the general conduct of the experiments. Subsequently the Government also directed that artificial rain-making experiments should be conducted immediately in the catchment area of the Bhavani and the Cauvery as meteorological factors in that area were favourable and in view of the fact that the water level in the Mettur Reservoir was low at that time and required augmentation.

In accordance with these instructions, experiments were commenced at very short notice in the Nilgiris. Generators for the vaporization of calcium chloride were installed in Glenmorgan and Ootacamund in the beginning of September 1955. Generators were also installed at Pykara Dam, Kotagiri and Singara Power House.

The generators used an electric arc welding plant for the vaporisation of calcium chloride except for a week at Ootacamund when coal vaporisation was tried. Generally about 8 lb. of calcium chloride was vaporised daily. A mixture of calcium chloride and sodium chloride was also used on some days. The vapours were sent up into the atmosphere through a vertical pipe about 35 to 40 feet high. No other method of seedling was tried.

Rainfall data over the whole Nilgiris area was collected and the data was analysed by the sub-committee. The results were presented to the reviewing committee on 18th October 1955. The

[29th September 1956

reviewing committee recommended the continuance of the experiments on artificial rainfall. The Government approved the proposals subject to the condition that the expenditure was limited to Rs. 6,500 originally sanctioned.

Accordingly experiments were conducted at the following centres : Ootacamund, Coonoor, Singara, Pykara Dam, Glenmorgan, Bhavanisagar and Madras City. These experiments were stopped from the first week of January 1956.

Experiments were done at the following centres on the dates mentioned against each :—

Ootacamund.—Experiments started on 2nd September 1955 and continued up to 30th September 1955; with a break of 3 days from 17th to 19th September. Again they were started on 14th November 1955 and continued up to 31st December 1955 with breaks on 27th November 1955 and 15th to 19th December 1955.

Pykara Dam.—Experiments started on 7th September 1955 and continued up to 30th September 1955 with break on 9th September 1955 and 17th to 19th September 1955. Experiments were again resumed on 28th November 1955 and continued up to 30th November 1955.

Glenmorgan.—Started on 5th September 1955 and continued up to 28th September 1955 with breaks on 18th and 19th September 1955.

Singara.—Started on 26th September 1955 and continued up to 30th September 1955. Again conducted on 23rd, 24th and 26th to 30th November 1955.

Coonoor.—Started on 10th December 1955 and continued up to 31st December 1955 excepting in the following days : 15th to 18th and 26th December 1955.

Kattabettah.—Experiments conducted on 22nd, 23rd and 26th to 30th November 1955.

Kotagiri.—Experiments conducted from 24th to 30th September 1955.

Bhavanisagar.—Experiments conducted from 9th to 27th December 1955 with breaks on 11th, 15th, 20th and 28th December 1955.

Mylapore, Madras.—Experiments conducted from 15th November to 23rd December 1955 with breaks on 20th and 27th November 1955, 4th, 11th, 14th and 17th December 1955.

29th September 1956]

Rainfall data was obtained for a number of stations from the Collector of Nilgiris and the Electricity Department. Data for a few stations were also supplied by the Agricultural Meteorologist. The data supplied by the Collector refers to the Stations under the control of the Revenue Department. Such statistics are published in the Gazette, and available for a number of years from 1870.

Isohyetal lines were drawn for each day on blue-print copies of a map of the Nilgiris area. Lines were drawn for the following intervals : 0·25″, 0·50″, 0·75″, 1·0″, 1·5″, 2·0″, 3·0″, and 4·0″ for daily rainfall and 20″, 15″, 10″, 7·5″ and 5·0″ for monthly rainfall. From the rainfall pattern in the area, the effect of the seedling was sought to be assessed taking into consideration the prevailing wind direction and the elevations of the various places.

The reviewing committee at its meeting on 1st May 1956 scrutinized the rainfall data gathered and the Isohyetal maps prepared.

The method of analysis, viz., studying the daily Isohyetal maps and drawings conclusions therefrom was not considered by the reviewing committee to be conclusive and did not lead to definite results. Another method of study was suggested in which rainfall data in the windward and leeward directions with reference to the seedling centre was to be tabulated. From the tabulated data the effect of the seedling was to be assessed with referenec to the increase or decrease of rainfall in the windward side as compared to the leeward side. This type of analysis has been completed and has indicated encouraging results.

The reviewing committee at its meeting on 1st May 1956 also authorized the continuation of the experiments for a further period of one month from 15th June to 15th July 1956.

In the meanwhile the Electricity Department started experiments in Mukurthi from 14th May 1956 in view of the very acute position regarding the reservoir levels and power supply cut prevailing in the area.

The Chairman of the Artificial Rain-making Committee has authorized the continuance of the experiments from 14th May 1956. Experiments are now daily being conducted at the following centres : Mukurthi, Pykara and Ooty.

Final conclusions regarding the efficiency of artificial rain-making has not yet been arrived at. The present position however is that artificial rain-making is successful under certain favourable conditions.